

## Descriptions of First-Instar Larvae of *Aedes cantator* (Coquillett) and *Aedes sollicitans* (Walker)<sup>1</sup>

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Only four comparative works dealing with first-instar *Aedes* larvae are available at the present time. Bohart (1954) and Price (1960), describe and present figures of 14 *Aedes* species from California and 19 *Aedes* species from Minnesota respectively. Of these, Bohart includes five Delaware species and Price nine. Marshall (1938) describes and presents figures of 11 species of British *Aedes*, three of which occur in Delaware. Dodge (1945) in an unpublished Doctoral Dissertation, dealing with first-instar mosquito larvae of the United States, discusses 17 species of North American *Aedes*; 12 of these occur in Delaware. Of the 19 species of aedine mosquitoes present in Delaware, descriptions of only 10 species of first-instar larvae appear in the literature. The descriptions of five additional species appear in Dodge's unpublished work mentioned above.

With new descriptions, presented in this paper, of the first-instar larvae of *A. cantator* (Coquillett) and *A. sollicitans* (Walker) accompanied by the four comparative works mentioned above, there remain only two species *A. grossbecki* Dyar and Knab and *A. aurifer* (Coquillett) to be described for Delaware. However, it was felt that *Aedes* material should be collected for all of the Delaware species and compared with the existing descriptions before an attempt is made to present a key to this important genus of mosquitoes.

In Delaware, *A. cantator* and *A. sollicitans* are found frequently in the same type habitat. These two species now may be separated in the first larval instar by the descriptions that follow, especially by differences in the pecten teeth, length of antennal hair 4, and the relative length of the dorsal preapical bristle and the apical pecten tooth.

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## PROCEDURE

Adult females of both species were collected in the field and provided with a blood meal either in the field or upon returning to the laboratory. They were caged and allowed to oviposit on mud or peat pads which first had been wrapped in muslin and covered with cheesecloth, similar to the method employed by Haeger (1958) for *A. taeniorhynchus*.

After a short period of conditioning at room temperature, which permitted embryonic development, the egg samples were immersed in a nutrient broth media, except in the case of *A. sollicitans* where some of the eggs were placed in a 5000 ppm saline solution.

Larvae were killed in hot water, preserved in alcohol, cleared in beechwood creosote, and mounted, in the manner described by Price (1960). Some of the larvae were killed within eight hours after emergence; others as much as 24 hours after emergence. The extent of primary and secondary sclerotization, of the siphon, was more evident in late first-instar larvae.

For details concerning the manner of description and measurements utilized, the reader is referred to Price (1960) whose methods were followed closely.

It was not considered necessary to label all parts in both drawings since Fig. 1 can be compared readily to Fig. 2 where all necessary diagnostic structures are identified.

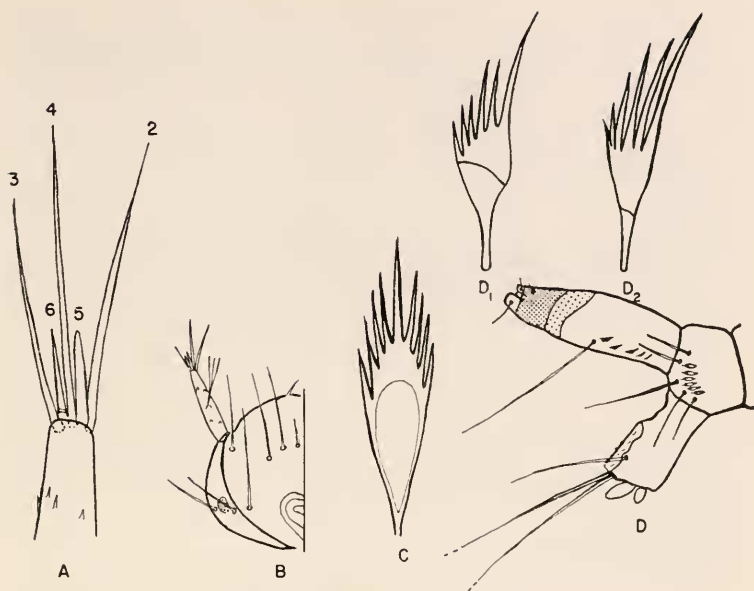
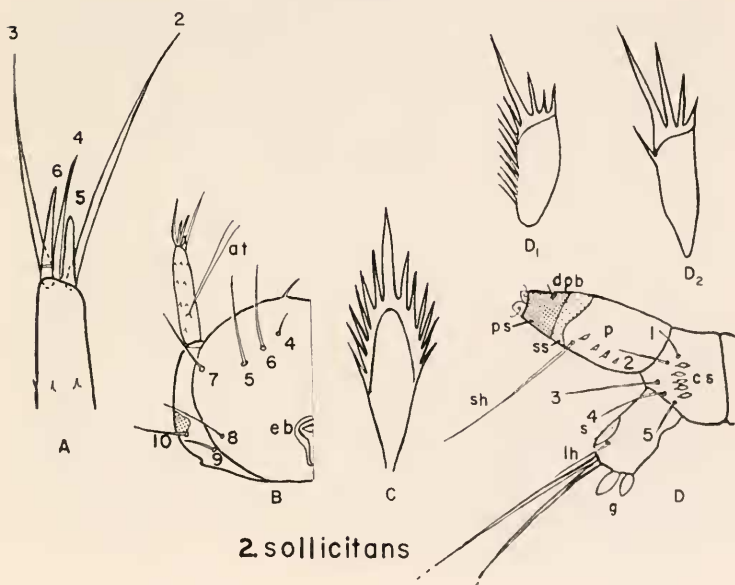
***Aedes cantator* (Coquillett) (Fig. 1)**

*Head:* Hairs single, postclypeal distinctly posterior to a line drawn through base of upper and lower head hairs on same side.

FIGURES 1-2. *Aedes cantator* and *A. sollicitans* first-instar larvae.

FIG. 1. A. Terminal portion of antenna: 2, inner subapical hair; 3, outer subapical hair; 4, dorsal median terminal hair; 5, hyaline process; 6, dorsal external finger process. B. Head-dorsal side, left half. C. Comb scale. D. Terminal segments. D<sub>1</sub> Distal pecten tooth. D<sub>2</sub> Penultimate pecten tooth.

FIG. 2. A. Terminal portion of antenna. B. Head—*at*, antennal tuft; *eb*, egg burster; 4, postclypeal hair; 5, upper head hair; 6, lower head hair; 7, preantennal hair; 8, sutural hair; 9, transsutural hair; 10, supra-orbital hair. C. Comb scale. D. Terminal segments—*dpb*, dorsal pre-apical bristle; *cs*, comb scale; *g*, anal gills; *lh*, lateral hair; *ps*, primary sclerotized ring; *s*, saddle; *sh*, siphon hair; *ss*, secondary sclerotized ring; *I-5* pentad hairs; D<sub>1</sub> Distal pecten tooth; D<sub>2</sub> Penultimate pecten tooth.

*I. cantator**2. sollicitans*

Antennal ratio, (antenna: midline of head) 1:1.6 to 1:2.1. Antennal tuft double or triple occasionally quadruple; antennal hairs 2 and 4 long, 3 somewhat shorter, 5 and 6 approximately equal. Antenna spiculate.

*Terminal Segments:* Comb scales five to seven ( $\bar{x} = 5.7$ ), individual scale with long terminal spine followed by spines which are only slightly subequal to one another. Pentad hair 3 longer and stouter than other pentad hairs. Siphon ratio 2.5:1 to 4.0:1. Pecten teeth three to five ( $\bar{x} = 4.0$ ). Siphon hair single. The dorsal preapical bristle fine, one-half to two-thirds as long as the apical pecten tooth. Anal gills short, budlike.

*Specimens Examined:* A total of 15 specimens was examined. Five of these were reared from eggs of females collected on October 21, 1962 in New Castle (New Castle Co.), Delaware and the other ten from females collected at Little Creek (Kent County), Delaware, October 25, 1962.

***Aedes sollicitans*** (Walker) (Fig. 2)

#### LITERATURE CITED

*Head:* Hairs single, upper, lower and postclypeal more or less in a straight line. Antennal ratio 1:1.7 to 1:2.2. Antennal tuft usually double, occasionally triple; antennal hairs 2 and 3 long, 4 shorter usually less than two-thirds the length of 2 and 3; slightly longer than 5. Antenna spiculate.

*Terminal Segments:* Comb scales four to six ( $\bar{x} = 5.3$ ), individual scale with long terminal spine followed by a series of weaker, shorter spines. Pentad hair 3 longer and stouter than other pentad hairs. Siphon ratio 2:1 to 3:1. Pecten teeth three to six, usually four or five ( $\bar{x} = 4.2$ ). Siphon hair single the dorsal preapical bristle stout, as long or longer than the apical pecten tooth. Anal gills short, budlike.

*Specimens Examined:* A total of 17 specimens was examined. The females from which the eggs were obtained were collected from three areas in Delaware: Fenwick Island (Sussex County), Dover Air Force Base Firing Range Marsh (Kent County) and Port Mahon (Kent County).

- BOHART, R. R., 1954. Identification of first stage larvae of California *Aedes* (Diptera, Culicidae). Ann. Ent. Soc. Amer. 47: 355-356.
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## Reviews

THE ANTS OF NORTH DAKOTA. By **George C. Wheeler** and **Jeanette Wheeler**. University of North Dakota Press, Grand Forks, N. D. Pp. viii + 326. 1963. Price: \$4.00, postpaid.

According to the preface, "this handbook is intended for anyone interested in the ants of the northern plains, but it is especially designed for amateurs. We hope that it may be of use in high school biology courses. Myrmecologists and biogeographers will be concerned with the ecological and distributional data." These are modest intentions which are more than borne out by the contents. It is far more than a consideration of the ants of one state and may be used with profit by entomologists in general.

The frontispiece is an outline map of the United States with the number of species of ants in each state which are common to it and to North Dakota. For example, of the 83 species in North Dakota 23 are found in California, 16 in Florida and 41 in Pennsylvania. The Wheelers have gone to unusual pains to check the accuracy of their identifications, which have been verified by such authorities as Cole, Creighton, Gregg, Smith and Wilson. They have also amassed such an enormous collection (5000 samples, each consisting of one to thousands of specimens for a total of an estimated half-million ants) that their listing of relative abundance is significant. The most numerous